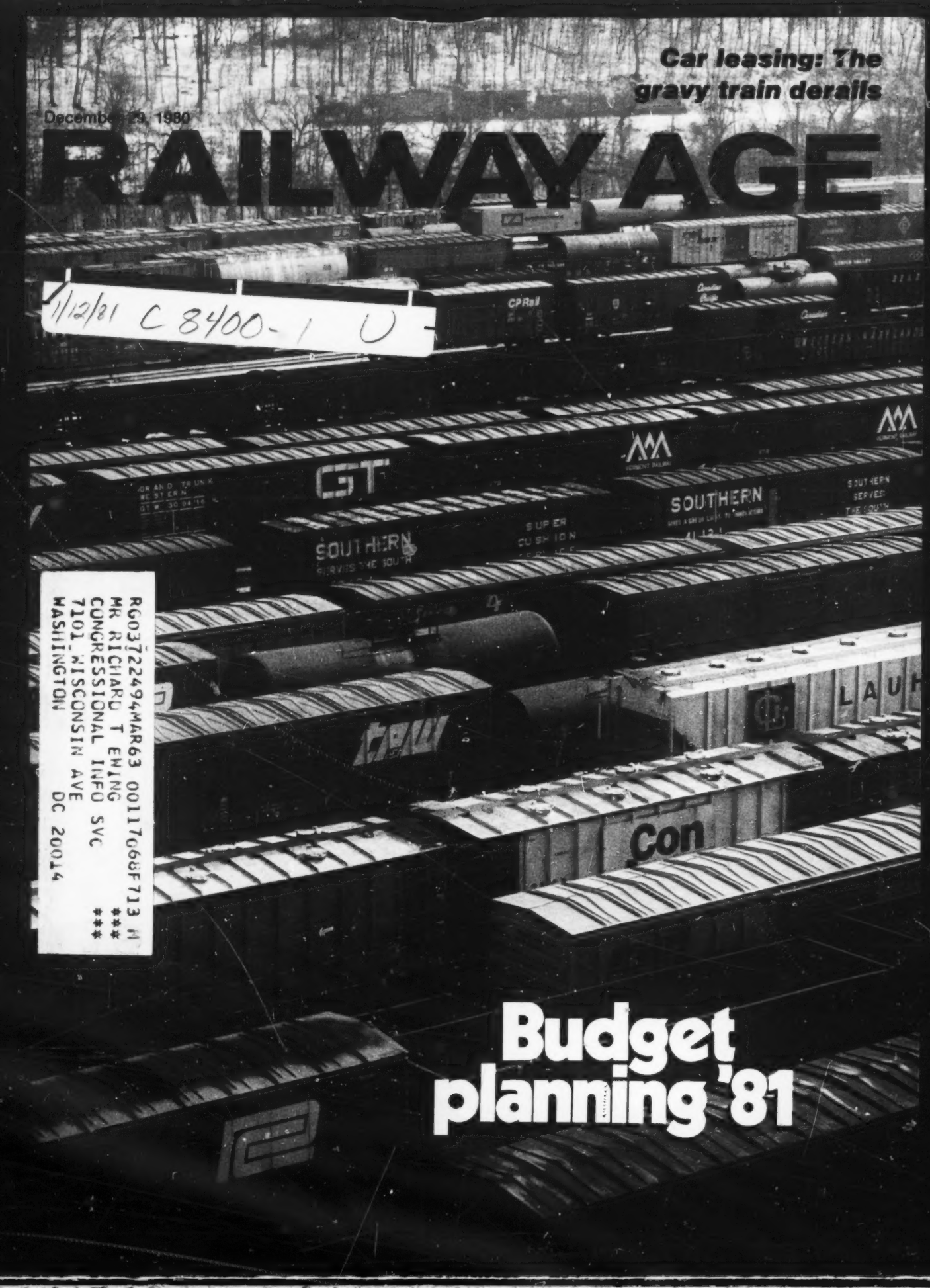
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Budget planning '81

RAILWAY AGE

USPS 449-130

December 29, 1980 • Vol. 181, No. 24

Editorial and Executive Offices
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212/966-7700

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Railway Age, descended from the American Railroad Journal (1832) and the Western Railroad Gazette (1856), and published under its present name since 1876, is indexed by the Business Periodicals Index and the Engineering Index Service. Name registered in U.S. Patent Office and Trade Mark Office in Canada.

Published semi-monthly by the Simmons-Boardman Publishing Corporation, 508 Birch St., Bristol, Conn. 06010. Subscription rates to all railroad, rail rapid transit employees and industrial traffic department employees in the U.S. possessions, Canada and Mexico: $10 one year, $16 two years; all other countries $25 one year. All other subscribers in the U.S., Canada, and Mexico: $20 one year; all other countries, $35 one year. All subscriptions payable in advance. Single copies $1 plus postage and handling, except special issues. Copyrighted © 1980.

Address all subscriptions, change of address and correspondence concerning them to Subscription Dept., Railway Age, P.O. Box 530, Bristol, Conn. 06010. Change of address should reach us three weeks in advance of next issue date. Send old address with new enclosing, if possible, your address label. Post Office will not forward copies unless you provide extra postage.

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Printed at Hughes Printing Co., 34 North Crystal St., East Stroudsburg, PA 18301. Controlled circulation postage paid at East Stroudsburg, PA., and at Bristol, CT. POSTMASTER—SEND FORM 3579 TO P.O. BOX 530, BRISTOL, CONN. 06010

Inside

LUTHER S. MILLER

CAPITAL SPENDING: UPS AND DOWNS

Just a couple of months ago the winds of recession appeared to be abating, and a chilled national economy was showing signs of thawing. Now, the economists are saying that the warmer climate evident in October was, after all, only an Indian summer. By mid-December, those handmaidens of hard times—sluggish business and costly capital—were back on the scene.

Generally speaking, the railroads outperformed the economy during most of 1980; for the first three quarters of the year, at least, they made a most respectable showing (p. 10). But they are not immune to the nation's economic woes, and railroad capital spending budgets for 1981 reflect the cautious approach to capital investment that all business must take in times like these. The best forecasts now available—from the Association of American Railroads, from individual carriers, from the American Railway Car Institute, and from other railway suppliers—suggest that expenditures in 1981 may be 30% below 1980 levels.

There is a bright spot in this dreary picture, and it is this: Railroad spending in 1980 was extraordinarily high—around 90,000 freight cars and 1,700 locomotives were installed. So a drop of even 30% will not really be catastrophic. The American Railway Car Institute is predicting that around 58,500 new cars will be installed in 1981 (though some find that figure a little high); about 1,000 new locomotives will be installed. As recently as 1976, only 52,000 new cars and 567 locomotives were installed.

Railway Age's year-end capital spending survey is summarized in the article beginning on p. 22. It includes the detailed spending plans of railroads accounting for about half of all Class I mileage.

That article is followed (p. 25) by another that is singularly appropriate at this time. In the second article, Jerry Lutes of Ernst & Whinney and John S. Harman of the U.S. Department of Transportation thoughtfully examine the bases on which railroads evaluate capital projects. "In the past," they write, "faulty analysis procedures have sometimes resulted in misleading rates of return and expensive investment mistakes." The authors go on to describe procedures developed by sophisticated roads that can help budget planners everywhere avoid some of these costly mistakes.

A third article, by consultant Walter H. Pogue, Jr., explains why there is not likely to be a large market in the immediate future for new boxcars. "The gravy train derails" (p. 34) is the story of the rise and fall of the per diem boxcar.

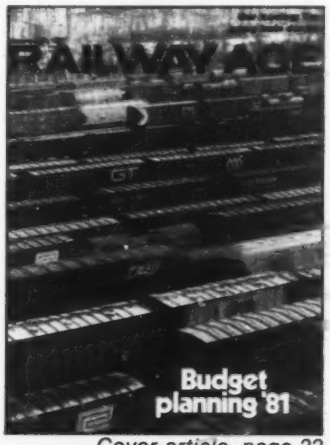
THE "RAILROAD" YOU NEVER HEARD OF

"The nation's railroads" is a term used by the Association of American Railroads to describe the Class I carriers. "Short-line railroads" is a term that covers most of the other railroads normally included in railroad statistics. But there is another railroad complex that comes under neither of these rubrics, although it is as big as many Class I's. It is, in fact, not a railroad at all; it comprises the trackage and the equipment of several hundred private industries. This industrial railroad complex adds up to more than 12,000 miles of track; it has a fleet of 334,000 freight cars and 2,600 locomotives; and it is one of the major (though rarely identified) buying influences in the industry. It is the subject of a detailed report—"The 1981 Survey of Industrial Owners of Railway Track and Equipment"—compiled by the market research department of *Railway Age*. For details, see the ad on p. 20.

RAILWAY AGE

December 29, 1980

FEATURES



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22 Budget planning '81
Business is down, and capital costs are high—so railroads, for the time being at least, are scaling down their investment plans for 1981. Spending is now pegged at something over $4 billion—a 30% drop from 1980 levels.

25 Playing the capital investment game to win
There are no risk-free investments—but a study of the procedures of a dozen railroads has produced guidelines for actions designed to improve the decision-making process and maximize the return on capital.

34 The gravy train derails
"Rural America is dotted with vistas of mile after mile of boxcars in storage on unused spur lines and sidings," writes consultant Walter H. Pogue, Jr. How this came to be—and what is likely to come of it—is his subject.

46 Deregulation clouds '81 traffic picture
Will railroad deregulation bring a rate explosion that will send traffic fleeing from the rails—or will it give railroads the tools they need to win traffic back from competing modes? Here's what shippers are saying.

54 Vandalism: Time to crack down
Railroads in the U.S. and Canada reported 54,000 separate acts of vandalism last year. There's a growing belief among security people that "soft" courts, which now let many vandals off lightly, need to adopt a tougher stance.

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COVER: Freight cars in Conrail's Allentown (Pa.) Yard were photographed by Don Ball, Jr.

Nine-month earnings top $613 million

Class I railroads have reported ordinary (net) income of $613.1 million, on operating revenues of $20.7 billion, for the first nine months of 1980. In the comparable 1979 period, they netted $554.9 million on operating revenues of $18.5 billion. Net railway operating income in this year's first three quarters was $669.7 million, up from $560.8 million in 1979. The rate of return on investment for the 12-month period ended Sept. 30 rose to 3.17% from 2.64% a year earlier.

A slight economic upturn in the third quarter, coupled with rate increases, helped account for the industry's improved performance. Net income in this year's third quarter came to $156.1 million, up from $60.7 million in the comparable 1979 quarter. The biggest third quarter improvement came in the West, where net income rose to $185.8 million in 1980 from $78.7 million in 1979. Southern roads increased their third-quarter net earnings to $80.8 million from $68.7 million a year earlier. Eastern roads showed a decline, with their collective deficit rising to $110.5 million from the $86.7 million posted in 1979.

For the first nine months of 1980, nine railroads reported deficits in net income—six in the East, two in the West, and one in the South.

CLASS I RAILROADS IN THE UNITED STATES[2]

For the third quarter

		1980 (millions)		1979 (millions)
Operating revenues		$ 6,994.5		$ 6,403.6
Operating expenses		6,623.2		6,249.8
Income taxes on ordinary income		63.4		54.7
Provision for deferred taxes		93.5		29.6
Net railway operating income				
United States		222.1		75.1
Eastern District	Def.	88.9	Def.	101.3
Southern District		86.9		82.0
Western District		224.1		94.4
Ordinary net income[1]				
United States		156.1		60.7
Eastern District	Def.	110.5	Def.	86.7
Southern District		80.8		68.7
Western District		185.8		78.7

For the first nine months

Operating revenues		$20,740.7		$18,501.0
Operating expenses		19,672.0		17,668.5
Income taxes on ordinary income		186.9		153.3
Provision for deferred taxes		231.8		135.0
Net railway operating income				
United States		669.7		560.8
Eastern District	Def.	98.8	Def.	147.3
Southern District		300.1		250.5
Western District		468.4		457.6
Rate of return*				
after provision for deferred taxes		3.17%		2.64%
Ordinary net income[1]				
United States		613.1		554.9
Eastern District	Def.	96.9	Def.	103.5
Southern District		278.0		225.3
Western District		432.0		433.1

Def. = Deficit *Rate of return for 12 months ended Sept. 30
[1]Income before extraordinary items [2]All data exclude Chicago, Rock Island & Pacific Railroad

Mexico opts for smaller landbridge

Mexico's dream of a railroad landbridge short-cutting the Panama Canal is about to come true, though on a scale far smaller than some of its early promoters had envisioned.

The Ministry of Communications and Transport, the Mexican National Railways (NdeM), and private investors are together spending $39.5 million to rehabilitate and re-equip an existing 188-mile rail line between Coatzacoalcos on the Gulf of Mexico and Salina Cruz on the Pacific, and to build container port facilities and switch yards at both ends of the line. Orders have been placed for 10 2,250-hp diesel-electric locomotives to be supplied by General Electric, and 140 TTX-type 89-foot flatcars.

The service is scheduled to begin next spring, initially with one train a day in each direction (two locomotives, 20 flatcars and a caboose). Eventually it is planned to operate three trains a day in each direction.

The project is far less ambitious and costly than one proposed several years ago by a group within NdeM headed by Eduardo Harfuch. The Harfuch plan—price-tagged at $800 million in 1973 dollars—called for construction of a new double-track, electrified railroad capable of moving 100-car, 5,000-ton container trains across the Tehuantepec Isthmus at average speeds of 60 mph (*RA*, Oct. 25, 1976, p. 32). The new line would have had a maximum grade of less than 1%, compared with the 2.2% maximum grade of the existing line.

The scaled-down project has not met with universal approval. "It is too small to really demonstrate the potential of a landbridge," complains one NdeM officer. "It's as if the builders of the Panama Canal had said, 'We will first dig a small ditch to see if it works.'"

It's estimated that the Coatzacoalcos-Salina Cruz landbridge will save three to four days in transit time for freight that would otherwise move through the Panama Canal. This timesaving, landbridge proponents claim, will more than compensate for the slightly higher cost of diverting freight from the canal to the railway.

Defenders of the scaled-down project point out that the landbridge is intended to do more than siphon some traffic from the canal. They say it will also spur industrial development in the impoverished Tehuantepec Isthmus and will ease the transportation problems of Mexico's export and import industries.

The Ministry of Communications and Transport is providing $13.8 million of the capital funds; this is being used for port construction and roadway rehabilitation. The railroad is supplying $15.2 million, mostly for locomotives and cars. The private sector is investing $10.5 million in

Budget planning '81

Roy H. Blanchard

Railroad capital spending next year will again be in the multibillions—but until traffic picks up, the signals are against any major expansion of equipment programs.

Capital budgets for 1981 are beginning to trickle out of railroad boardrooms—and most of them carry the bearish stamp of the recession.

Informed sources are now estimating that investment in railroad capital improvements in 1981 will total around $4.3 billion, a decline of about 30% from the estimated $6.2 billion spent in 1980.

That decline, it should be emphasized, does not represent any long-range pessimism within the industry. There is, in fact, considerable optimism in the air. The recession has not cut as deeply into railroad revenues and profits as many had feared. Meanwhile, thanks to the Staggers Rail Act of 1980, the railroads are moving into a milder regulatory climate than they have enjoyed in nearly a century.

But budget planning for 1981 has had to take into consideration short-term trends that affect all business, the most important of which is the soaring cost of investment capital during a period of business downturn. In the case of the railroads, the smaller 1981 budgets also reflect the fact that purchases of both freight cars and locomotives have been unusually strong in the last two or three years, and only the most essential purchases must now be made.

● **New equipment: Down.** Nine railroads that account for nearly half of all Class I mileage in the U.S. have made their detailed 1981 capital programs available to *Railway Age*. These railroads purchased 964 locomotives in 1980; they expect to buy 449 in 1981. They installed 18,313 new freight cars in 1980; they expect to install 13,673 in 1981. (Conrail is one of the 9 railroads whose 1981 equipment programs are included in these figures. Conrail emphasizes that its 1981 budget depends upon "obtaining necessary funding from the federal government...and on the necessity for the equipment based on customer requirements." Conrail's program calls for 100 new locomotives in 1981, vs 18 actually acquired in 1980, and 3,679 new freight cars. If Conrail's 1981 equipment plans fail to come to fruition, the decline in railroad investment next year will be steeper than the above figures indicate.)

Not only will equipment purchases by Class I railroads be down, but purchases by nonrailroad investors will drop even more sharply. Some of the big freight car buyers of just a year or so ago—Itel and National Railway Utilization Corp., for example—are now more eager to get rid of cars than to acquire them.

Just what all of this means for 1981, in hard numbers, is difficult to pin down. A more or less "official" forecast for 1981 calls for the installation of 58,500 new cars, down from the estimated 90,000 that were delivered and installed in 1980.

But two major carbuilders think that figure is too high; they're looking for no more than 45,000 new cars installed in 1981. *Railway Age's* own estimate is 50,000 cars installed. As for new car orders to be placed in 1981, estimates range from one builder's guess of around 33,000 to more optimistic forecasts of up to 50,000.

Locomotive deliveries will also be down substantially—from an estimated 1,700 in 1980 to no more than 1,000 in 1981.

● **Maintenance: Up.** One expense that will be up in 1981 is maintenance, mostly because this is an operating item that railroads cannot control as tightly as they control capital spending. The 10 roads reporting to *Railway Age* estimate that they will spend $2.7 billion on maintenance of equipment in 1981, up from $2.3 billion in 1980; and $2.2 billion on maintenance of roadway and structures, up from $1.9 billion this year.

Following is the road-by-road picture of capital investment programs for 1981, as developed by *Railway Age:*

Burlington Northern, Inc., plans consolidated capital expenditures in 1981 (excluding Frisco, with which it recently merged) of $308.7 million, down from $566.6 million in 1980. The 1981 budget calls for $144.4 million for equipment (compared with $381 million in 1980) and $164.3 million for fixed plant ($185.5 million in 1980). BN plans to acquire 55 locomotives and 1,500 new freight cars in 1981, compared with 280 locomotives and 2,961 freight cars in 1980. Maintenance of equipment spending is estimated at $835 million for 1981, up from $686 million in 1980; and m/w and structures spending is estimated at $690 million for '81, compared with $615 million in '80.

(Frisco's 1981 capital expenditures are now estimated at $35 million; no breakdown has been given. Prior to its merger with Burlington Northern, Frisco had prepared a capital budget of $57 million for 1981, compared with $53 million in 1980.)

Conrail, which unlike most railroads capitalizes its maintenance expenses, has prepared a capital budget of $844 million for 1981, compared with $455 million actually spent in 1980. Equipment is budgeted at $391 million in 1981, up from $127 million in 1980, and fixed plant is budgeted for $463 million, up from $318 million—depending, as noted, upon the availability of financing and upon customer need. In addition to the maintenance expenses that are capitalized, Conrail plans to invest $121 million in equipment maintenance in 1981, compared with $118 million estimated for 1980.

Chicago & North Western has a total capital budget of $241.2 million for 1981, compared with $349.1 million actually spent in 1980. The '81 program calls for $138.9 million for equipment and $102.3 million for fixed plant, compared with $272.9 million for equipment and $76.2 million for plant. C&NW's 1981 equipment program includes 68 locomotives and 3,000 freight cars; in 1980 the railroad acquired 73 locomotives and 6,311 freight cars. (C&NW's expanded fixed plant program for 1981 calls for continued rehabilitation of its east-west main line, replacing 115- and 112-pound rail with 136-pound rail and installing new ties, anchors, and ballast; 120 miles of new cwr to replace 112-pound rail; installation of 130 miles of 112-pound cwr to replace 100-pound rail, plus anchors and tie plates; installation of 450,000 new and 184,000 reusable crossties; placement of 225,000 cubic yards of ballast; and extension of microwave 654 miles from southern Minnesota to Kansas City.) For maintenance of equipment, C&NW has budgeted $144 million in 1981, compared with $130.9 million in 1980; and for m/w and structures, $156.3 million, up from $131.5 million.

Denver & Rio Grande Western is trimming its 1981 capital budget to $8 million, less than half the $19 million spent in 1980. D&RGW, which acquired 16 locomotives in 1980, plans no equipment purchases in 1981. Fixed-plant expenditures, however, will rise to an estimated $8 million in 1981 from the $5.3 million spent in 1980. Rio Grande will install 56 track miles of new rail. Equipment maintenance spending is budgeted at $54 million in 1981, up from $48.5 million in 1980; m/w and structures spending will rise to $51 million from $46 million.

Illinois Central Gulf had not completed its 1981 capital budget in mid-December, but a spokesman said next year's program would be substantially higher than the $268 million spent in 1980, probably in excess of $300 million. In 1980, ICG invested $162 million in fixed-plant improvements and $106 million in equipment. ICG's equipment maintenance expenditures added up to $160 million in 1980, m/w and structures to $110 million.

Kansas City Southern has earmarked $35 million for 1981 capital projects—$22 million for equipment (12 locomotives and 230 freight cars) and $13 million for fixed plant (of which $11 million will go for rail relay, ctc, and related projects; $2 million for mechanical facilities and other structures). In 1980, KCS had a capital program totaling $49 million—$32 million for equipment (six locomotives and 600 freight cars) and $17 million for fixed plant. For equipment maintenance, KCS plans to spend $25 million in '981, compared with $20 million this year; for m/w and structures, $50 million, up from $45 million.

Missouri Pacific's 1981 capital expenditures are now estimated at $225 million, compared with $280 million in 1980. For equipment MoPac will spend $150 million (100 locomotives and 2,150 freight cars), down from $212 million in 1980 (192 locomotives, 2,371 freight cars). Improvements will include construction of 7.6 miles of second main track from Osawatomie to Lane, Kans.; relaying 232 miles with new 136-pound cwr; relaying 157.8 miles with relay 115-pound and 112-pound cwr; construction of 4,974 feet of new bridges, replacing 5,991 feet of old bridges; extension of nine sidings and construction of five new sidings at various locations; competion of yard improvements at Houston, Kansas City, Osawatomie, Coffeyville, St. Louis, and Dupo; construction of a new storage-in-transit yard at Livonia, La.; installation of 88.7 miles of ctc between Spring, Tex., and Valley Junction; extension of mirowave; construction of a new overhead crane piggyback facility at East Dallas;

(Continued on page 57)

Capital budgets, 1981 vs 1980

	Estimated 1980 (millions)	Projected 1981 (millions)	% Change
Burlington Northern	$566.6	$308.7	−46
Chicago & North Western	349.1	241.2	−31
Conrail*	455.0	844.0	+85
Denver & Rio Grande Western	19.0	8.0	−58
Frisco	53.0	31.0	−42
Illinois Central Gulf	268.0	300.0	+12
Kansas City Southern	49.0	35.0	−29
Missouri Pacific	280.0	225.0	−20
Norfolk & Western	144.8	131.1	− 9
Santa Fe	278.3	258.1	− 7
Union Pacific	375.8	199.1	−47

*Includes capitalized maintenance; total subject to governmental approval of financing.

Budget planning '81

(Continued from page 23)

and expansion of the DeSoto truck shop. Fixed-plant spending will rise to $75 million from the $68 million invested in 1980. MoPac will lay out $432 million for equipment maintenance in 1980, up from $377 million; $281 million for m/w and structures, up from $245 million.

Norfolk & Western's 1981 capital budget of $131,063,000 includes $66,745,000 for equipment (six locomotives and 1,538 freight cars) and $64,318,000 for fixed plant. In 1980 NW invested $94,177,222 in equipment (25 locomotives, 1,459 freight cars) and $50,572,700 for fixed plant.

Santa Fe has programmed capital expenditures totaling $258.1 million in 1981, a slight drop from 1980's $278.3 million. Santa Fe's '81 equipment program is budgeted at $151.1 million and includes 60 new locomotives (30 of which are carried over from its 1980 program), 124 rebuilt locomotives, 406 new freight cars (301 carried over from '80), and 928 rebuilt cars. In 1980, Santa Fe spent $188.3 million on equipment—110 new locomotives plus 85 rebuilds, and 1,079 freight cars. For fixed plant Santa Fe has budgeted $107 million, up from $89.9 million in '80. Major projects include the laying of 436 miles of welded rail (92 miles of which are carried over from 1980); installation of 154 miles of ctc between Gallup, N.M., and McCartys; completion of the new Flynn Yard at Oklahoma City; extension of eight sidings to accommodate unit coal trains; renewal of 1.86 miles of bridges; and addition of five million gallons of storage capacity for diesel fuel. Equipment maintenance will cost Santa Fe an estimated $517 million in 1981, up from $465 million; m/w and structures, $417 million, up from $350 million.

Union Pacific's 1981 capital budget, $199.1 million, is down substantially from the $375.8 million actually spent in 1980. For equipment—including 40 locomotives and 1,100 freight cars—UP has budgeted $88.6 million. This compares with $290.3 million spent in 1980 for 230 locomotives and 1,753 freight cars. But UP's fixed plant expenditures will increase from $85.5 million in '80 to an estimated $110.6 million. Fixed-plant projects include acquisition of various Milwaukee Road properties for $19 million and construction of a classification yard at Yermo, Calif., for $9 million. UP expects to spend $455.7 million for equipment maintenance in 1981, compared with $397.3 million in 1980; for m/w and structures, $364.9 million, up from $314.2 million.

Southern Railway has not yet announced a complete capital program for 1981, but it has already placed orders for $156 million worth of equipment. Southern has ordered, for 1981 delivery, 40 locomotives from General Electric and 20 from EMD, plus 2,900 freight cars—800 covered hoppers, 100 covered gondolas, and 100 wood chip hopper cars, all from Greenville Steel Car; 800 covered hoppers from Pullman Standard; 300 limestone hopper cars from Ortner; and 700 pulpwood cars and 100 flatcars from United-American Car Co.

In Canada, CN Rail has announced a $500-million capital program for 1980, up from $425 million this year. CN's 1981 equipment outlays, estimated at $126.2 million, will cover acquisition of 10 new and 12 rebuilt locomotives and 1,639 freight cars. In 1980 CN spent $112.2 million for 40 locomotives and 950 freight cars. CN plans to increase fixed-plant spending from $312.8 million in 1980 to $373.8 million in 1981. CN's equipment maintenance will cost around $614 million in 1981, compared with $536 million this year; m/w and structures spending will rise to $348.7 million from $304.4 million. ■

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Two teenagers confessed to causing this recent FEC derailment at Vero Beach, Fla.—but a judge let them go free.

Vandalism: Time to crack down

By LUTHER S. MILLER, Editor

Hooligans have been harassing the railroads ever since the first puffing steam engine presented an irresistible target to a country lad with a rock in his hand.

A century ago the pages of *Railway Age* were peppered with reports of vandalism. Bands of "wild Indians" raided the encroaching tracks of the Chicago & North Western and the Milwaukee Road in the Dakota Territory. Professional trainwreckers flourished in the West. Amateur vandals flourished everywhere.

Today the red menace has faded, and train-wrecking has become more of an accident than an art. But the vandals are still busy—a handful of professionals looking for loot, a host of amateurs looking for a thrill. The AAR counted more than 54,000 acts of vandalism last year, and that figure is probably understated. The vandals are particularly active in the great urban sprawls of the East and the Midwest, where commuter trains and freight yards present attractive trargets. But no road is totally safe from their depradations, no train crewmen enjoy total protection from their rocks and bullets.

● **"A fortune for security."** Take, for example, the Florida East Coast. No railroad, perhaps, has worked harder than FEC to provide maximum security for its people and its property. Vigilance is more than a watchword on FEC; it is a commandment, and has been since the days, not very long ago, when the railroad was subjected to extraordinary acts of violence during a long and bitter strike. Labor peace has long since returned to the railroad, but the lessons learned during the period of strife have not been forgotten. These lessons are enormously beneficial to FEC's employees and customers.

"We spend a fortune for security," says Senior Vice President Ray Wyckoff. "We have guards at all strategic points. Our property protection people are radio equipped. We have outside forces to protect road equipment. And where we know we have a problem—at West Palm Beach, for example, and in the Miami area—we regularly hire outside security people."

Nonetheless, the files in Wyckoff's offices are replete with instances of vandalism:

"Crosstie placed on track, camouflaged to indicate a large pile of dirt."

"Steel strap placed across southbound main line, resulting in malfunction of crossing gates."

"Foreign object thrown at locomotive." (This is the single most frequent entry.)

"Loading pallets and barrels placed on tracks."

"Switch lock damaged."

"South arm of signal gate stolen."

"Crossing gate removed."

Some incidents are more serious than others:

"Engineer on southbound train Miami area received head injuries from rock thrown through screen on engineer's side of locomotive."

"Engineer in West Palm Beach area struck by fragments of bottle thrown from local tavern; it hit mirror on engineer's side of locomotive and pieces of bottle came through screen."

For locomotive crews everywhere, the most unnerving acts of vandalism have been those involving the hurling of "foreign objects" through locomotive windshields, sending splinters of glass flying through the cab.

● **Safety glass.** Shattering glass is no longer a problem on the FEC. Long before the Federal Railroad Administration made the installation of safety glass mandatory (see p. 56), the FEC had moved on its own to afford its crewmen this protection. Now all of the railroad's locomotives are fitted with optic-quality Triplex or Sierracin glass that has met or surpassed the FRA requirement that it be able to withstand the impact of a speeding bullet or of a 24-pound concrete block traveling at 30 mph. In a successful test, the concrete block shatters; the glass doesn't. Altogether, the nation's railroads are spending around $75 million to retrofit their locomotive fleets with this high-quality glazing, plus millions more to reglaze their cabooses. It is a program that has the enthusiastic support of management and labor alike. In an unprece-

Reported incidents of vandalism, 1979 and 1978*

Category	1979 Incidents	1979 Arrests	1978 Incidents	1978 Arrests
Multilevel cars	22,488	165	29,878	249
Company property and equipment	5,549	934	5,096	797
Track and signals	5,788	652	5,923	563
Switch tampering	1,446	312	1,718	347
Track obstruction	7,329	897	7,695	742
Stonings	8,262	1,758	9,009	1,809
Shootings	777	257	757	308
Other	2,574	412	2,947	419
Totals	54,213	5,357	62,923	5,232

*Based on reports to the AAR from railroads representing 74% of total railway mileage in the U.S. and Canada.

dented action, the Association of American Railroads and the brotherhoods joined in asking the FRA to initiate the rule-making proceeding that led to the new standards.

But while safety glass will help solve the single most serious problem—personal injuries to crews and passengers, of which 435 cases were reported in the U.S. and Canada last year—it is harder to find remedies for some of the more extreme acts of vandalism. One of these took place on the FEC just a few weeks ago.

● **"Big hole!"** Oct. 1, 1980, is the date of the first entry on this incident: "Extra 424 North with the count of 19 0 70 did collide with several loaded gondolas at the Russell Concrete siding in Vero Beach (Milepost 228.4) after a switch was opened by vandals."

Robert O. Vest, superintendent of general claims and property protection for the FEC, reported:

"The switch leading to the siding at Russell Concrete was in the open position, causing the Extra 424 North to proceed into the siding and strike several loaded gondolas, resulting in derailment. The switch lock had been forceably removed and the switch handle thrown to the open position....

"J. E. Kight stated that his job on the train Extra 424 North was conductor. He was running the engine at the time of the derailment. Kight has been employed with the FEC for the past 15 years, with 12 years experience as an engineer. He has not been involved in any similar incident while employed by the railroad.

"Kight stated that the X-424-N proceeded north from Ft. Pierce at approximately 7:40 p.m., Oct. 1, 1980....As the train rounded a curve south of Vero Beach, Kight observed a clear block signal at Milepost 231.6. As the engine traveled over the 12th St. crossing, the block signal dropped red in his face and he set the brakes. The train was traveling between 35-36 mph. The engine light illuminated the switch and he observed that the switch was open. Kight yelled 'Big hole!' as the train brakes were set into emergency stop. The train went over the switch into the siding. Kight dropped to the floor. Kight stated that the train was approximately 200 feet south of the switch when he observed the open switch. Leslie Davis [engineer] was on the west side of the engine. He went flying forward as the train hit the cut of cars in the siding...."

"To be perfectly frank, I though we were dead," Kight said later.

Luckily, both crewmen escaped serious injury. As much could not be said for the train. Damage was estimated at close to three-quarters of a million dollars.

Two suspects were quickly apprehended—a couple of teenage boys who saw the wreck and graphically described it to a radio reporter. In separate interrogations, each finally confessed to helping the other throw the switch that sent Extra 424 North crashing into the siding. But a judge threw out both confessions, and the boys went free.

Wyckoff has seen this happen before, and he reacts with quiet exasperation. "The justice system has got to be changed," he says. "It doesn't seem to make any difference how many you take into court. You know the majority will get away with no more than a slap on the wrist. We get the same vandals back three or four times."

● **A grim national picture.** What is happening on the FEC is only a small part of a national vandalism picture that can only be described as grim. FEC, as noted, is actually one of the best-protected railroads to be found anywhere; it is also a railroad whose officers are not afraid to speak out on the problem. On some other roads, the subject is almost taboo, with the result that the AAR's Safety and Special Services section has difficulty collecting complete statistics on the extent of the problem. But the statistics that the AAR does collect, from railroads representing nearly three-fourths of the total Class I mileage in the U.S. and Canada, are chilling enough.

Last year, 54,213 separate acts of vandalism were reported to the AAR, a decline from the 62,923 incidents reported in the previous year, but nothing to be complacent about. There were 5,387 arrests reported last year, including 4,423 juveniles; in 1979 there were 5,232 arrests, including 4,413 juveniles. The number of convictions is not a matter of record, but it is believed to be relatively low. Railroad security people everywhere share Ray Wyckoff's complaint about the softness of judges dealing with juvenile offenders.

The biggest single target of vandals is multilevel auto carriers; 22,488 incidents were reported in 1979, down from 29,878 in 1978 (a reduction due partly to the fact that an increasing number of these carriers are fully enclosed, therefore less attractive to rock-throwers, and partly to the fact that there were fewer targets last year due to the slump in motor vehicle traffic).

After the multilevels, random stonings of trains comprise the next biggest category—8,262 such incidents in 1979. The smallest category is shootings (777 in 1979), but it is also the most serious.

● **Why?** It would take a regiment of sociologists and psychologists to probe the "why" of this senseless assault on human lives and property.

"It seems to be a reflection of the times," says Marvin Pelon, the AAR's assistant director of special services. "People see trains as symbols of power and authority, and they vent their frustrations by attacking them. There is also, of course, the problem of kids with nothing better to do."

What are the solutions?

High-standard safety glass is obviously a solution to part of the problem, but it does not afford total protection. In warm weather the windows of locomotives must be open; screens then become the only protection. And, as AAR's Pelon points out, "When the conductor leans out of the bay window of his caboose to inspect his train, he becomes a target."

Fencing can be a deterrent, but again not a foolproof one. "The next thing you know," says Pelon, "they have vandalized the fences."

Pelon believes a good long-range solution is a continuing education campaign to cut down on trespassing. "Vandalism is often a crime of opportunity," he points out, "and trespassers are presented with that opportunity."

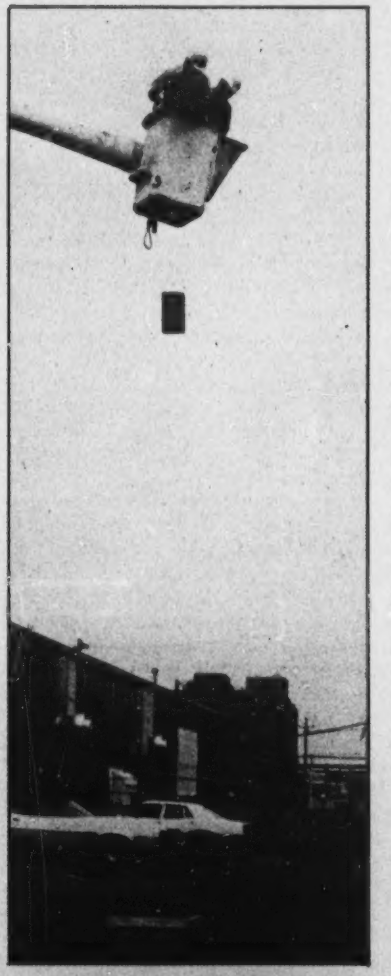
Last year 46,757 persons were arrested for trespassing on railroad property, and another 393,921 trespassers were re-

moved from the property and released with a warning. The comparable figures for 1978 were 32,693 arrested and 339,312 warned.

As one way of trying to discourage trespassing, the AAR provides a film, "The Right Track," for showing to youth and community groups. Amtrak, which has a particularly severe vandalism problem in the Northeast Corridor, has its own film, "No Second Chance."

But the best deterrent to vandalism will come, Ray Wyckoff and many others believe, when judges decide to make the punishment fit the crime—and let vandals know they will not soon have a second chance to imperil lives and destroy property. ■

Protective glazing: Meeting FRA's new standards



FRA requires windshield glazing tests like this, in which a 24-pound cinder block is dropped with 30-mph impact speed; the glazing must allow no penetration by the block. Photos from Rohm & Haas.

The most mindless and cruel forms of vandalism are the attempts to kill and injure railroad passengers and crew members by shooting bullets and throwing rocks at moving trains. An alarming number of these incidents are occurring—over 9,000 in 1979, of which almost 800 were shootings.

To protect crews and passengers, FRA one year ago established a set of minimum safety requirements for windshields and side windows on locomotives, passenger cars, and cabooses. In essence, the new rules require glazing materials to be bulletproof, impact resistant, and shatterproof:

- Windshields and side glazing must be capable of stopping a standard 22-caliber long rifle bullet 40 grams in weight at 960 feet per second.
- Windshield glazing must survive center impact from a cinder block of 24 pounds at 44 feet per second (30 mph). The corner of the block must hit the glazing and make no inside surface penetration.
- In the above test, no glass fragments (spall) can fly off the interior, protected side of the glass, that would penetrate a thin sheet of aluminum foil 6 inches away.
- Side window glazing must survive impact by the same projectile at a lower velocity of 12 feet per second (8 mph).

The new rules also require manufacturers to certify compliance with all requirements. They are now included in FRA Regulations 49 CFR Part 223.

These requirements became effective on Dec. 31, 1979, at a time when most 1980 budgets were already committed; so far most railroads have been slow in complying with the new standards. Since June 1980, they have been required to replace broken windows with glazing material that meets the specifications; they will be required to replace all windshields and windows not in compliance by June 30, 1983. This deadline applies to all common carriers, including Amtrak, and to commuter operations carried over common carrier lines in whole or in part. BART, PATH, and the New York and Chicago subway systems will be exempt, since none of their tracks are common-carrier operated.

Glazing manufacturers have been busy putting their products through the required testing and certification procedures, hoping to get a share of the major orders that some expect to be placed in the first and second quarters of 1981. Some of the principal manufacturers and their products are shown in the accompanying table.

Manufacturer	Trade names	Product description
Chromalloy Safetee Glass Division	HRV Railglas	Double ply, one of strengthened glass and one of thin float glass, laminated with polyvinyl butyral.
Ellcon-National	Triplex Safety Glass	Outside and interior layers of thermally toughened glass laminated with a core of polyvinyl butyral.
General Electric Co.	Lexgard	Two plies of Lexan polycarbonate sheet bonded together with an interlayer.
	Margard	One and two plied of Lexan Polycarbonate with abrasion resistant coating.
Globe Amerada Glass Co.	CRG - Certified Railroad Glazing	Multiple layers of chemically strengthened thin float glass laminated with interlayer of polyvinyl butyral.
PPG Industries Inc.	Railway Glazing	Outside heat strengthened glass laminatedwith interlayer and inside spall shield. Some with heating film and third ply of glass.
Rohm & Haas	Tuffak CM-2	Abrasion-resistant polycarbonate sheet. Single ply or double ply with eighth or quarter-inch air space.

Market

CARLOADINGS

Loadings of revenue freight in the week ended Dec. 6 totaled 447,882 cars, according to the Association of American Railroads. This was a decrease of 24,213 cars, or 5.1%, compared with the corresponding week last year. Ton-miles generated by carloadings in the week ended Dec. 6 are estimated at 18.7 billion, a decrease of 1.6% below the corresponding week of 1979.

REVENUE FREIGHT CARLOADINGS

Commodity	Dec. 6 week	Nov. 29 week	Nov. 22 week
Grain	32,666	23,140	33,092
Farm products	6,288	5,506	5,517
Metallic ores	32,956	25,973	29,555
Coal	113,862	99,874	122,360
Crushed stone, gravel & sand	12,383	10,238	13,502
Nonmetallic minerals	13,344	10,984	13,198
Grain mill products	16,538	14,120	16,920
Food and kindred products	16,873	14,392	18,531
Primary forest products	20,108	14,675	19,826
Lumber & wood products (except furniture)	8,169	7,718	9,459
Pulp, paper & allied products	20,780	19,075	20,247
Chemicals & allied products	29,401	25,183	27,488
Petroleum products	5,798	4,807	5,731
Stone, clay & glass products	15,310	12,398	15,401
Coke	5,924	5,561	5,950
Metals & products	16,327	14,901	16,463
Motor vehicles & equipment	18,610	14,775	19,161
Waste & scrap materials	12,679	10,699	13,548
Forwarder & shipping assn. traffic	9,832	8,522	11,172
All other carloads	39,725	33,143	42,639
LCL traffic	249	224	241
Total cars loaded	**447,822**	**375,908**	**450,001**

Cumulative total 49 weeks	1980	1979
	21,407,164	**22,643,012**
Estimated revenue ton-miles (billions), 49 weeks	**865.0**	**864.3**

PIGGYBACK LOADINGS

U.S. piggyback loadings for the holiday week ended Nov. 29 totaled 26,715 cars (24.5% below the corresponding non-holiday week of 1979) and 47,746 trailers or containers (down 23.0% from 1979). Cumulative volume for the first 48 weeks of 1980 is 1,540,508 cars (down 10.7% from 1979) and 2,797,314 trailers or containers (down 8.1% from 1979).

CANADIAN CARLOADINGS

Canadian railway revenue freight loaded in the seven-day period ended Nov. 7 totaled 5.0 million tons (down 2.3% from 1979). Cars loaded totaled 74,584 (down 3.4% from 1979). Cumulative loadings for 1980 were up to 225.98 million tons (up 0.4% from 1979).

• *Boston & Maine.*—Purchased 100 100-ton, 3,000-cubic-foot-capacity covered hopper cars from Portec's Railcar Division. The twin-compartment cars will be used primarily for hauling sand and cement.

• *Chicago & North Western.*—Is acquiring 2,700 jumbo covered hopper cars: 1,000 under optional five-year lease from North American Car and 1,700 under 20-year lease from Pullman Standard, at total cost of more than $100 million. Builders for NA jumbos are Berwick and Ingalls Shipbuilding (500 each), for December 1980-March 1981 delivery. PS will build its cars at Butler, Pa., for March-June delivery.

• *City of Philadelphia.*—General Railway Signal is the apparent low bidder on a $6.9-million project to signal the new eight-mile rapid transit line to the Philadelphia airport. Under the bid, GRS would supply and supervise the installation of switch machines, color light signals, wired electronic instrument housings, and a dispatcher's control machine.

• *Freight cars and locomotives.*—The following report has been received from the AAR and the ARCI:

DELIVERED

	October 1980	October 1979	September 1980	Ten months 1980	Ten months 1979
Built new by carbuilders	6,956	7,758	6,596	70,712	68,513
Built new in RR shops	412	349	351	4,813	4,469
Built new—total	7,368	8,107	6,947	75,525	72,982
Rebuilt	21	96	199	1,143	812
TOTAL DELIVERED	**7,389**	**8,203**	**7,146**	**76,668**	**73,794**
Locomotives (new and rebuilt)	101	183	80	1,489	1,564

ORDERED

To be built new by carbuilders	1,947	6,129	4,406	33,058	99,777
To be built new in RR shops	200	0	0	4,550	4,463
To be built new—total	2,047	6,129	4,406	37,608	104,240
To be rebuilt	0	95	0	1,063	825
TOTAL ORDERED	**2,047**	**6,224**	**4,406**	**38,671**	**105,065**

ON ORDER AND UNDELIVERED

	November 1 1980	November 1 1979	October 1 1980	Average backlog 1980	Average backlog 1979
To be built new by carbuilders	53,389	117,422	59,806	78,923	113,746
To be built new in RR shops	5,989	6,305	6,201*	6,491	6,359
To be built new—total	59,378	123,727	66,007*	85,414	120,105
To be rebuilt	20	100	41	290	103
TOTAL ON ORDER	**59,398****	**123,827**	**66,048***	**85,704**	**120,208**
Locomotives (new and rebuilt)	496	774	595	870	1,000

* Revised figures

**Due to revisions and cancellations of some orders, the backlog has been reduced by 1,308 cars